

REMARKS

The Office Action of July 31, 2008 has been reviewed and the Examiner's comments carefully considered. Claims 14-26 are currently pending in this application, and claim 14 is in independent form.

Allowable Subject Matter

The Applicants would like to thank the Examiner for indicating that claims 16, 20, 22 and 24 are directed to allowable subject matter. Specifically, the Examiner has indicated that claims 16, 20, 22 and 24 would be allowable if rewritten in independent form including the base claim and any intervening claims. Since the Applicants consider that independent claim 14, from which claims 16, 20, 22 and 24 directly depend, defines patentable subject matter, claims 16, 20, 22 and 24 are maintained in dependent form at the present time.

35 U.S.C. §103 Rejections

Claims 14, 18, 21, 25 and 26 stand rejected under 35 U.S.C. §103(a) for obviousness based upon United States Patent No. 6,870,939 to Chiang et al. (hereinafter "the Chiang patent") in view of Japanese Patent Publication No. JP 08-95572 to Masatake et al. (hereinafter "the Masatake publication"). In view of the following remarks, the Applicants respectfully request reconsideration of this rejection.

As defined by independent claim 14, the present invention is directed to a sound detecting mechanism that includes a pair of electrodes forming a capacitor on a substrate in which one of the electrodes is a back electrode forming perforations therein corresponding to acoustic holes, and the other of the electrodes is a diaphragm. The diaphragm is made of at least one of a metal film and a laminated film. The metal film is formed by at least one of sputtering in a low temperature process, vacuum vapor deposition and plating technique. The laminated film is formed of an organic film, a conductive film, or any combination thereof. The back electrode is formed on the substrate, and a spacer is formed from part of a sacrificial layer comprising an organic film for determining a distance between the diaphragm and the back electrode.

With this arrangement, the sacrificial layer is made of the organic film, and etching is performed on the sacrifice layer with an organic-film remover or plasma treatment,

thereby preventing the diaphragm and the back electrode from being damaged. Also, since the process of the present invention is executed at a low temperature, the thickness is easily varied, and the controllability of the thickness is improved. As a result, the manufacturing process can be simplified to provide a sound detecting mechanism capable of detecting sound pressure signals with high sensitivity.

On the other hand, the Chiang patent is directed to a sound detecting mechanism that includes a pair of electrodes for forming a capacitor on a substrate (11). One of the electrodes is a back electrode (17) having perforated holes (15) formed therein corresponding to acoustic holes, and the other one is a diaphragm (1). The diaphragm (1) is made of a laminated film that is formed by an inorganic film (4-5-6: silicon, 9: fluorine polymer) and a conductive film (8) (gold, aluminum) formed by sputtering. The Chiang patent further describes that the back electrode (17) is formed on the substrate (11), and provides for a spacer (10) made of an organic film (polyamide). However, it fails to teach or suggest that the diaphragm is made of a metal film, a laminated film formed of an organic film and/or a conductive film, and that the spacer is formed from part of the sacrificial layer as required by independent claim 14.

The Masatake publication does not cure these deficiencies. The Masatake publication discloses a hollow structural body comprising a silicon substrate (3) and a metal layer (6), in which a spacer is formed between the silicon substrate (3) and the metal layer (6) by evaporating part of a sacrificial layer (4) made of a low melting organic matter (LB film).

However, this reference fails to teach or suggest applying the above-noted techniques to:

[a] sound detecting mechanism comprising a pair of electrodes forming a capacitor on a substrate in which one of the electrodes is a back electrode forming perforations therein corresponding to acoustic holes and the other of the electrodes is a diaphragm, wherein the diaphragm is made of at least one of a metal film and a laminated film, the metal film being formed by at least one of sputtering in a low temperature process, vacuum vapor deposition and plating technique, the laminated film being formed of an organic film, a conductive film, or any combination thereof, [and] the back electrode is formed on the substrate...

as described in the present application and required by independent claim 14.

In addition, there is no teaching or suggesting in the Chiang patent or the Masatake publication to determine a distance between the diaphragm and the back electrode by *forming a spacer from part of a sacrificial layer* as required by independent claim 14. In the recent case of *KSR International Co. v. Teleflex Inc.*, 127 S. Ct. 1727 (2007), it was held that “rejections on obviousness grounds cannot be sustained by *mere conclusory statements*; instead there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.”(emphasis added). The Examiner has provided no reason why one of ordinary skill in the art would use the method in the Masatake publication to form the spacer (10) of the Chiang patent.

For the foregoing reasons, the Applicants believe that the subject matter of independent claim 14 is not rendered obvious by the Chiang patent in view of the Masatake publication. Reconsideration of the rejection of claim 14 is respectfully requested.

Claims 18, 21, 25 and 26 depend from and add further limitations to independent claim 14 or a subsequent dependent claim and are believed to be patentable for at least the reasons discussed hereinabove in connection with independent claim 14. Reconsideration of the rejection of claims 18, 21, 25 and 26 is respectfully requested.

Claims 15 and 17 stand rejected under 35 U.S.C. §103(a) for obviousness by the Chiang patent in view of the Masatake publication and further in view of United States Patent No. 6,243,474 to Tai et al. (hereinafter “the Tai patent”). Claims 19 and 23 stand rejected under 35 U.S.C. §103(a) for obviousness by the Chiang patent in view of the Masatake publication and further in view of Japanese Patent Publication No. JP 2002-223499 to Takehide et al. (hereinafter “the Takehide publication”). In view of the following remarks, the Applicants respectfully request reconsideration of this rejection.

Claims 15, 17, 19 and 23 depend from and add further limitations to amended independent claim 14. The combination of the Chiang patent and the Masatake publication was discussed hereinabove in connection with independent claim 14. The Tai patent is directed to a thin film electret microphone, and is provided by the Examiner as allegedly teaching a diaphragm made from either an Ni film or a Cu film formed by electroplating and a conductive layer made of conductive material. The Takehide publication is directed to a condenser microphone, and is provided by the Examiner as allegedly teaching a substrate that is a monocrystal silicon substrate. These references do not cure the deficiencies of the

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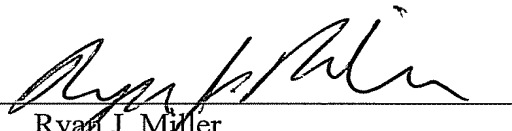
combination of the Chiang patent and the Masatake publication. Therefore, claims 15, 17, 19 and 23 are believed to be patentable for at least the reasons discussed hereinabove in connection with independent claim 14. Reconsideration of the rejection of claims 15, 17, 19 and 23 is respectfully requested.

Conclusion

Based on the foregoing remarks, reconsideration of the rejections and allowance of pending claims 14-26 are respectfully requested. Should the Examiner have any questions, or wish to discuss the application in further detail, the Examiner is invited to contact the Applicants' undersigned representative by telephone at 412-471-8815.

Respectfully submitted,
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